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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ROANE, AARON F	

ART UNIT	PAPER NUMBER
3739	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,375	CRONIN, NIGEL	
	Examiner	Art Unit	
	Aaron Roane	3739	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23 and 25-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,13-20,23,25-35 and 38-45* is/are rejected.

7)☒ Claim(s) *7-12,21,22,36 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

The original requirement for the election of species filed on 9/26/2003 was relaxed in response to the persuasive arguments of the response filed on 11/26/2003 and all of the claims were examined. However, in Applicant's present response (filed 7/29/2004) to the initial non-final rejection filed 3/2/2004, Applicant has cancelled claim 24 upon which claims 25 and subsequently claim 26 depend.

Claims 1-23 and 27-45 will be examined on their merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 depends on cancelled claim 24 and claim 26 depends on claim 25. The examiner will interpret claim 25 to depend on claim 23 and claim 26 to depend on claim 25.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-6, 13-20, 23, 25-35, 38-43 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Carl et al. (USPN 6,047,216).

Regarding claim 1, Carl et al. disclose an elongate device (20) comprising an antenna (distal portion of 314) at its tip or distal end and a dielectric body (distal portion of 316 located along the length of 322) surrounding the antenna, see col. 14-16, and particularly col. 20, lines 13-32 and figures 2, 3 and 10.

Regarding claim 2-6, Carl et al. disclose the claimed invention. Carl et al. disclose that the frequency range is 2 GHz to 300 GHz which yields a wavelength range of roughly 1 mm to 100 mm. Here the major dimension of the antenna is the length coinciding with the length of (322). Additionally, Carl et al. disclose that the diameter of the catheter or elongate device is 2.76 millimeters, see abstract, col. 20, lines 13-32 and figure 10. Therefore the wavelength of radiation may be 0.476 mm and dielectric body extension away from the antenna roughly corresponds to the radius of the elongate device which is 1.38 mm which is more than twice the wavelength of radiation.

Regarding claims 13 and 16-18, Carl et al. further disclose that a rounded, substantially hemispherical tip portion which is an extension of the dielectric body extends beyond the end of the antenna, see col. 14-16, and particularly col. 20, lines 13-32 and figures 2, 3 and 10. Additionally, since the operating wavelengths of radiation are in the range of roughly 0.476 mm to 100 mm, it is trivial to verify that the rounded, substantially hemispherical tip portion has a radius of between 0.5 mm to 1 mm.

Regarding claim 14, Carl et al. disclose a pointed tip (distal end adjacent to section 322).

Regarding claim 15, Carl et al. disclose a tip portion comprised of a different material (metal choke 318) from the dielectric body, see col. 15, line 57 through col. 16, line 17 and figure 3.

Regarding claim 19, Carl et al. further disclose that the antenna is the distal extension of an inner conductor (314) of a coaxial conductor (310), wherein the inner conductor (314) extends longitudinally further than the outer conductor (312), see col. 15, line 57 through col. 16, line 17 and figures 2, 3 and 10.

Regarding claim 20, Carl et al. disclose the claimed invention. Carl et al. disclose that the frequency range is 2 GHz to 300 GHz which yields a wavelength range of roughly 0.476 mm to 100 mm. It is well known in the art to use dielectric materials with a dielectric constant value between 2 and 4. Therefore, within the dielectric material the wavelength range is roughly 0.0.476 mm to 71.4 mm. Additionally, the examiner interprets the use of the term "substantial" as within a factor of 10. This means that as long as the length of the antenna falls within a range of 0.0476 mm to 714 mm the disclosure by Carl et al. meets the claim, which it inherently does.

Regarding claims 23 and 25-29, Carl et al. disclose the claimed invention. Carl et al. disclose that the frequency range is 2 GHz to 300 GHz which yields a wavelength range of roughly 0.476 mm to 100 mm. It is well known in the art to use dielectric materials

with a dielectric constant value between 2 and 4. Therefore, within the dielectric material the wavelength range is roughly 0.0.476 mm to 71.4 mm. The examiner interprets the use of the term "substantial" as within a factor of 10. This means that as long as the length of the antenna falls within a range of 0.0476 mm to 714 mm the disclosure by Carl et al. meets the claim, which it inherently does. Carl et al. disclose the hemispherical tip, see figure 3.

Regarding claims 30-35, Carl et al. disclose the claimed invention. Carl et al. disclose that the frequency range is 2 GHz to 300 GHz which yields a wavelength range of roughly 0.476 mm to 100 mm. It is well known in the art to use dielectric materials with a dielectric constant value between 2 and 4. Therefore, within the dielectric material the wavelength range is roughly 0.0.476 mm to 71.4 mm. The examiner interprets the use of the term "substantial" as within a factor of 10. This means that as long as the length of the antenna falls within a range of 0.0476 mm to 714 mm the disclosure by Carl et al. meets the claim, which it inherently does. Carl et al. disclose the hemispherical tip, see figure 3. The device disclosed by Carl et al. inherently involves all of steps of the claimed method since it discloses all of the claimed structural features. As far as claim 33 is concerned, the length of the antenna certainly falls within the wide range of wavelengths of radiation within the dielectric which is 0476 mm to 71.4 mm, which again meets the claimed invention.

Regarding claims 38-43, Carl et al. disclose the claimed invention. Carl et al. disclose that the frequency range is 2 GHz to 300 GHz which yields a wavelength range of roughly 0.476 mm to 100 mm. It is well known in the art to use dielectric materials with a dielectric constant value between 2 and 4. Therefore, within the dielectric material the wavelength range is roughly 0.0.476 mm to 71.4 mm. The examiner interprets the use of the term "substantial" as within a factor of 10. This means that as long as the length of the antenna falls within a range of 0.0476 mm to 714 mm the disclosure by Carl et al. meets the claim, which it inherently does. Carl et al. disclose the hemispherical tip, see figure 3. The device disclosed by Carl et al. inherently involves all of steps of the claimed method since it discloses all of the claimed structural features. The partial reflection of electromagnetic waves is an inherent part of traveling waves that are incident on boundary interface of two differing indices of refraction (which are the dielectric and the biological medium). As far as claim 42 is concerned, the length of the antenna certainly falls within the wide range of wavelengths of radiation within the dielectric which is 0476 mm to 71.4 mm, which again meets the claimed invention.

Regarding claim 45, Carl et al. disclose an elongate radiation applicator for insertion into a living body to couple radiation into biological material, the applicator comprising an antenna (322, specifically the length between 324 and 326) and a dielectric body (316) surrounding the antenna the length of the antenna and the dielectric constant and dimensions of the dielectric body relative to the antenna being selected in relation to an intended operating frequency of the applicator so that the dielectric body encompasses

substantially the whole of the near-field of radiation emitted by the antenna, see col. 14-16, and particularly col. 20, lines 13-32 and figures 2, 3 and 10.

Claim 44 is rejected under 35 U.S.C. 102(b) as being anticipated by Kasevich et al. (USPN 6,097,985).

Regarding claim 44, Kasevich et al. disclose a device and method of treating tumors (see col. 15, lines 1-67) by providing an elongate body (200) with a pointed tip (distal end tip of 203) for insertion into the liver, and a microwave power generator (inherent since a microwave antenna is used) in order to irradiate a liver tumor where the steps include inserting the pointed tip into the tumor in the liver and transmitting microwaves to heat tumor, see col. 5-15.

Allowable Subject Matter

Claims 7-12, 21, 22, 36 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

In response to the arguments to claims other than claim 44, the examiner has provided further support in the form of the passage in the Carl et al. reference from col. 20, 13-32 and figure 10 and the previously filed interview summary entered 10/22/2004. The examiner has tried to demonstrate how easily Carl et al. meet the claimed invention. In the interview the examiner tried to point out how incredibly broad the term "near-field" is in its current use. To get straight to the point the examiner will illustrate how easily the Carl et al. disclosure meets the claimed invention. In doing so the examiner will make use claim 6. Reviewing Carl et al. with particular reference to col. 14-16, and particularly col. 20, lines 13-32 and figures 2, 3 and 10, one concludes that the catheter in figure 10 has a diameter of 2.76 mm and uses a disk loaded antenna from figure 3, wherein the range of frequency operation is 2 GHz to 300 GHz and the dielectric disclosed is Teflon (as asserted by Applicant, see page 10, last paragraph of response filed 7/29/2004) which has a dielectric constant of 2. From this information we conclude that the dielectric body roughly extends out 1.38 mm from the antenna and the range of operation wavelengths within the dielectric body are between 0.476 mm and 71.4 mm. This is easily asserted from the equation $c = f * \lambda$ or $\lambda = c/f$, where c is the speed of the electromagnetic wave in that particular medium, here the dielectric, f is the frequency and λ is the wavelength. Therefore the dielectric body extends away from the antenna more than two wavelengths of the electromagnetic wave in the dielectric. Claim 6 simply recites that the dielectric body need only extend away from the antenna half a wavelength of the electromagnetic wave in the dielectric in

order to encompass a substantially the whole of the "near-field". This very explicitly and concretely illustrate how easily Carl et al. disclose the claimed invention.

Additionally claims 23-35 and 38-43 have been provided with a new ground for rejection. The examiner has used the Carl et al. reference to reject these claims.

Finally, Applicant's arguments against the rejection of claim 44 are not at all persuasive. On page 15 Applicant asserts that Kasevich does indeed disclose treatment of the liver. However Applicant asserts that the device disclosed by Kasevich is not intended to make an incision to which the examiner agrees. However claim 44 as recited makes no reference whatsoever to any incision. Claim 44 only recited the insertion of the applicator into the liver, which Kasevich has disclosed.

Due to the enhancement of the earlier rejections to claims 1-6 and 13-20, this action is non-final.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Roane whose telephone number is (703) 305-7377. The examiner can normally be reached on 9am - 5pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on (703) 308-0994. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.R. A.R.
October 31, 2004

MICHAEL PEFFLEY
PRIMARY EXAMINER